

22592

23124

3 Hours / 70 Marks

Seat No.

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- Instructions :**
- (1) All Questions are *compulsory*.
 - (2) Answer each next main Question on a new page.
 - (3) Illustrate your answers with neat sketches wherever necessary.
 - (4) Figures to the right indicate full marks.
 - (5) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. Attempt any FIVE of the following :

5 × 2 = 10

- (a) State functions of proximity sensor.
- (b) Compare robot oriented programming with object oriented programming (any two points).
- (c) State various image devices used in robot lighting techniques.
- (d) List different robot languages.
- (e) Define Sensor.
- (f) State any two motion commands.
- (g) List different safety rules in robot handling.

2. Attempt any THREE of the following :

3 × 4 = 12

- (a) Explain region growing in image processing
- (b) Explain applications of robot in spot welding.
- (c) State the limitations of lead through programming.
- (d) Write a VAL program to palletize an object. (Assume all necessary dimensions)



- 3. Attempt any THREE of the following :** **3 × 4 = 12**
- (a) Explain procedure of robot maintenance.
 - (b) State any four sensor commands.
 - (c) State the use of Teach pendant in robots.
 - (d) Explain concept of universal hand.
- 4. Attempt any THREE of the following :** **3 × 4 = 12**
- (a) Explain the strain-gauge based sensor.
 - (b) Write a simple VAL program for Pick and Place operation.
 - (c) Explain the concept of robot intelligence.
 - (d) Explain object recognition techniques.
 - (e) State the use of Teach pendant in robots.
- 5. Attempt any TWO of the following :** **2 × 6 = 12**
- (a) Explain different Lighting Techniques.
 - (b) Explain mobility, locomotion and navigation technology may use in robots.
 - (c) Explain the working of Charge Coupled Device.
- 6. Attempt any TWO of the following :** **2 × 6 = 12**
- (a) Explain robot vision systems with the help of block diagrams.
 - (b) Explain telepresence and related technologies.
 - (c) Write a program for Bolt inspection task.
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